Guide to the Terms of Reference 24

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24 GUIDE TO THE TERMS OF REFERENCE

Table 24-1 cross references specific items of the EIS Terms of Reference (TOR) to the relevant section of the EIS. A copy of the TOR can be obtained from the NT EPA's webpage (www.ntepa.nt.gov.au).

Table 24-2 lists issues raised by the Anindilyakwa Land Council, and cross references these issues to the relevant section of the EIS.

Table 24-1 Guide to the Terms of Reference

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
1 Introduction The Proponent, Groote Eylandt Mining Company Pty Ltd, proposes to develop and operate the GEMCO Eastern Leases Project (the Project), approximately 2km east of the existing GEMCO Mine at Groote Eylandt, Northern Territory. Approximately 38Mt of manganese ore would be mined using open cut, strip mining methods from Exploration Licences in Retention 28161 and 28162. The Proponent proposes to transport the mined ore from the Project via a new haul to the existing concentrator, and related facilities at the GEMCO Mine for ore processing and product export. Construction would commence in early 2017, with mining anticipated to commence by the middle of 2018. The Project has a mine life of approximately 13 years. The development, operation and closure of the Project would result in an additional 3.5 years to the existing GEMCO Mine, which was originally planned to cease in 2027. It is anticipated that the Project and GEMCO Mine would cease operation by 2030. Rehabilitation, closure and decommissioning activities would occur between 2031 and 2036, with post-closure monitoring activities continuing thereafter. New infrastructure and components to be constructed as part of the Project would include: ■ New pits and temporary overburden emplacements; ■ An 8.5km unsealed haul road from the Project to the existing GEMCO Mine; ■ Flood protection measures; ■ Mine-related infrastructure, such as dewatering dams, water fill points, sedimentation dams, crib huts and truck park-up areas; and ■ Temporary laydown storage areas for equipment and consumables necessary for the development of the haul road and dewatering dams. The Proponent submitted the Notice of Intent for the Project to the Northern Territory Environment Protection Authority (NT EPA) on 6 May 2014 for consideration under the *Environmental Assessment Act* (EA Act). On 19 June 2014, the NT EPA decided that the Project required assessment under the EA Act at the level of an Environmental Impact Statement (EIS).	

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The NT EPA decision was based on the following environmental risks and potential impacts: ■ Risks to biodiversity and threatened species listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Northern Territory *Territory Parks and Wildlife Conservation Act* (TPWC Act); ■ Risks to surface water and groundwater, and related ecological processes, from the development, operation and closure of the Project and/or Project components; ■ Reduced air quality (e.g. dust) and potential for off-site impacts, including exposure to and uptake of contaminants by sensitive receptors; and ■ Potential social, cultural and economic impacts, including the risks of the Project not realising its projected economic and social benefits. In addition to the above potential impacts, assessment was considered warranted as Groote Eylandt is largely free of invasive weeds and feral animals that are present on the Northern Territory mainland. The Project is of a size and scale to potentially expose ecologically intact areas, and habitats of national significance, to threatening processes. The cane toad (*Rhinella marina*) and gamba grass (*Andropogon gayanus*; Weed of National Significance) are currently known to not be present on Groote Eylandt. The biological effect of the cane toad has been listed as a key threatening process under the EPBC Act.	
On 28 May 2014, the GEMCO Eastern Leases Project (EPBC 2014/7228) was referred to the Australian Government Minister for the Environment for consideration under the EPBC Act. On 23 June 2014, a delegate for the Australian Government Minister decided that the Project was a controlled action and required assessment and approval under the EPBC Act. The Project has the potential to have a significant impact on the following matters of national environmental significance that are protected under Part 3 of the EPBC Act: ■ Listed threatened species and communities (sections 18 & 18A); and ■ Listed migratory species (sections 20 & 20A). On 23 June 2014, a delegate for the Australian Government Minister agreed to accredit the assessment process under the EA Act for the purposes of assessing the Project. These draft Terms of Reference have been developed to assist the Proponent in preparing an EIS for the Project, in accordance with Clause 8 of the Environmental Assessment Administrative Procedures, and to meet the requirements as provided for in Chapter 4, Part 8, Division 6 of the EPBC Act.	
2 Description of the Proposed Action **2.1 General Information** The EIS should identify all the processes and activities intended for the Project and associated ancillary activities, during the life of the Project. As background to discussion of specific components, the following should be included:	
■ The title of the Project;	Section 1 – Introduction (Subsection 1.2)
■ The full name, contact details and postal address of the Proponent;	Section 1 – Introduction (Subsection 1.4)

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■ The location of the Project in the region and its proximity to: – landmark features; – underlying and/ surrounding tenure and land use (e.g. pastoral, national park, town boundary etc.); – sites of cultural significance; – sites of social significance; – regional community centres and townships; – areas on the National Reserve System; and – sensitive environments, such as major waterways, significant groundwater resources, significant natural features and conservation reserves.	Section 3 – Project Description (Subsection 3.3) Section 16 – Archaeology (Subsection 16.4)
■ Climate and atmospheric characteristics relevant to the Project, e.g. seasonal temperatures, humidity, wind speed and direction, evaporation, rainfall and extreme events (e.g. tropical cyclones, floods, drought and fire);	Section 11 – Climate
■ The background to the development of the Project, including discussion of previous environmental impact assessment and overview of historic mining, exploration and rehabilitation activities;	Section 3 – Project Description (Subsection 3.2)
■ An explanation and outline of the objectives, benefits and justification for the Project;	Section 1 – Introduction (Subsection 1.5) Section 3 – Project Description (Subsection 3.10.2)
■ The consequences, both positive and negative, of not proceeding with the Project;	Section 3 – Project Description (Subsection 3.10.3)
■ Identification of areas under exploration that may be mined in future, or any other potential future activities being planned;	There are no areas proposed to be mined beyond those described in Section 3 – Project Description.
■ How the Project relates to any other proposals or actions, of which the Proponent should reasonably be aware, that have been or are being taken, or that have been approved in the region;	Section 3 – Project Description (Subsection 3.3)
■ Details of the Proponent's company portfolio (e.g. a single entity or in joint venture, ownership being domestic or international, major commodities, position in the market and countries where key business dealings are undertaken); and	Section 1 – Introduction (Subsection 1.4)
■ National, State and/or Territory standards, codes of practice and guidelines relevant to the Project.	The government standards, codes of practice, and guidelines that are relevant to each environmental aspect addressed by the EIS are described, to the extent that they are relevant to the project, in the appropriate section of the EIS. For example, the standards, codes of practice, and guidelines that are relevant to Terrestrial Ecology, are provided in Section 7 – Terrestrial Ecology (Subsection 7.3). These include guidelines prescribing field survey techniques and the methodology for assessing the significance of impacts.

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2.2 Approvals and Conditions The EIS must provide information on requirements for approval or conditions that apply, or that the Proponent reasonably believes are likely to apply, to the Project, including, but not limited to: ■ A description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority;	Section 2 – Regulatory Framework (Subsections 2.2 and 2.3.4)
■ A summary of current agreements between the Proponent and the Northern Territory Government, and/or the Australian Government, and/or other stakeholders, including Traditional Owners and/or land managers;	Section 2 – Regulatory Framework
■ A statement identifying additional approvals that are required; and	Section 2 – Regulatory Framework (Subsections 2.4 and 2.5)
■ A description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the Project.	Section 19 – Environmental Management Plan provides information about the monitoring, enforcement and review procedures that are planned to be implemented by the proponent to ensure that project risks are mitigated and managed. Section 2 – Regulatory Framework provides the framework that the Territory and Federal Government regulators will follow for the monitoring, enforcement and review procedures. This includes the production of an Environmental Assessment Report, and EPBC Act approval and associated conditions.
The Proponent must include details of the approvals, certificates, permits etc., including any conditions imposed. Consideration should be given, but limited to, the following legislations: ■ *Environment Protection and Biodiversity Conservation Act 1999;* ■ *Territory Parks and Wildlife Conservation Act;* ■ *Water Act;* ■ *Waste Management and Pollution Control Act;* ■ *Mining Management Act;* ■ *Work Health and Safety Act;* ■ *Marine Pollution Act;* ■ *Radiation Protection Act;* and ■ *Public and Environmental Health Act & Regulations.*	Section 2 – Regulatory Framework
2.3 Environmental History The EIS must include details of the environmental record of the Proponent, including: ■ Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Proponent, and details of systems and processes that have been subsequently upgraded;	Section 19 – Environmental Management Plan (Subsection 19.3)

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■ Obligations, non-compliances or incidents under the *Mining Management Act*, which includes the history in relation to environmental matters, compliance or non-compliance with the requirements of the Mining Management Plan and other relevant management plan; and	Section 19 – Environmental Management Plan (Subsection 19.3)
■ Any international or national accreditations (e.g. ISO 14001 etc.), environmental awards or other recognition for environmental performance.	Section 19 – Environmental Management Plan
2.4 Project Components The EIS should identify all the processes and activities intended for the Project and associated ancillary activities, during the life of the Project. As background to discussion of specific components, the following should be included: ■ The current status of the Project;	Section 1 – Introduction (Subsection 1.6)
■ An overview of the life-of-mine schedule for the Project phases: – development; – operation; – decommissioning; – rehabilitation; and – closure.	Section 3 – Project Description (Subsection 3.7.9)
■ An outline of the topography and geology of the Project area, including: – major geological units; – mineral deposit type and style of mineralisation; – the target commodity; and – the extent and characterisation of: the mineral resource; orebody; and	Section 3 – Project Description (Subsections 3.3.3 and 3.5.3)
■ Sedimentary overburden and/or waste rock, including the ore: waste ratio.	Section 3 – Project Description (Subsection 3.5.3)
The reporting of exploration results, ore reserve and mineral resource estimates in the EIS should be consistent with the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.*	Section 3 – Project Description (Subsection 3.5.4)
■ Delineation of the whole-of-project footprint, using detailed maps and diagrams, including: – locations of existing infrastructure and mine components, e.g. concentrator etc.; – locations of existing public and private infrastructure, such as roads, power supply, landfills, airstrips, ports, bores, dams etc. – locations of existing water extraction points and storage facilities; – location of the mineral resources to be explored, developed, mined and included in mine rehabilitation and closure activities; – all areas to be cleared or disturbed, both temporarily and for the life-of-mine; and	Section 3 – Project Description (Subsections 3.6 and 3.7 and Figures 3-8 to 3-15)

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– the location of any works to be undertaken, structures to be built or elements of the Project, including but not limited to: – pits; – roads; – accommodation village and construction camps; – hard stands; – stockpiles; – product export or transhipment facilities; – mine-related infrastructure; and – water-related infrastructure, including: water extraction points; and storage facilities.	Section 3 – Project Description (Subsections 3.7 to 3.9 and Figures 3-12 to 3-14)
2.4.1 Mine Provide specific details of the following aspects of mine construction: ■ Methods for open pit mine construction;	Section 3 – Project Description (Subsections 3.7.1 and 3.7.7)
■ Volumes of materials required to support the construction of the mine, including, but not limited to, consumables, such as bulk chemicals and fuel; and	Section 3 – Project Description (Table 3-4) Section 12 – Air Quality (Table 12-7)
■ Plant and machinery required.	Section 3 – Project Description (Subsection 3.7)
Provide specific details of the following aspects of mine operation: ■ Mining types and methods, including the major equipment to be used in the various components of the operation;	Section 3 – Project Description (Subsection 3.7.1 and 3.7.2)
■ Type (e.g. cut-off grades), storage and management of the stockpiled materials (e.g. top soil, ore etc.);	Section 3 – Project Description (Subsections 3.7.1 to 3.7.4)
■ Quantity of material to be mined annually, including any proposed ramping up of production or staging of development; and	Section 3 – Project Description (Subsections 3.7.1 and 3.7.9)
■ Design details, dimensions and design concepts for the: – pits; – stockpiles; – mine access and haul roads; – explosives and detonator magazines; and – other significant mine infrastructure.	Section 3 – Project Description (Subsection 3.7.5)
The specifications should include details of the location, layout, factor of safety rating, expected design life, permeability and liner and capping design, where relevant.	Section 3 – Project Description (Subsection 3.7.5) Section 10 – Surface Water (Subsection 10.5.3)
2.4.2 Processing Provide details of the processing circuit, including but not limited to: ■ Transport of materials to the processing circuit;	Section 3 – Project Description (Subsection 3.7.3)
■ Processing methods, including: – the major equipment to be used in the various components of the processing operation; – ore treated; – feed grade; – recovery; and – process plant performance.	Section 3 – Project Description (Subsections 3.6.3 and 3.7.3). It should be noted that no changes to the concentrator or associated infrastructure are required as part of the project.

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■ Volumes of materials required, including, but not limited to, consumables such as bulk chemicals and fuel; and	Section 3 – Project Description (Subsection 3.7.5)
■ Water requirements, treatment and sources.	
Provide a detailed discussion of how the processing of ore from the Project differs from the current processing at the GEMCO Mine, including the potential use of acids, alkalis and other chemicals.	Section 3 – Project Description (Subsections 3.6 and 3.7). As noted above, no chemicals are used as part of the processing of the ore.
2.4.3 Waste Management Provide details of waste management, including but not limited to: ■ Descriptions of predicted waste streams, both industrial and domestic, including solid and liquid wastes at the Project site and other relevant locations;	Section 17 – Non-mining Waste (Subsection 17.2)
■ Information on potentially hazardous materials to be used or produced and methods for storage, transport, handling, containment, disposal and emergency management of these materials (including fuel); and	Section 17 – Non-mining Waste (Subsection 17.2.3) Section 18 – Health and Safety (Subsection 18.3.3)
■ An inventory of any waste streams requiring management during the Project.	Section 17 – Non-mining Waste (Subsection 17.2.3)
Provide a brief discussion of proposed waste management strategies, including reduction, reuse, recycling, storage, transport and disposal of waste in a relevant section of the EIS.	Section 17 – Non-mining Waste (Subsection 17.2.2)
2.4.4 Tailings Management Provide details of tailings management, including but not limited to: ■ Methods for managing tailings and associated process water, including volumes;	Section 3 – Project Description (Subsections 3.6.5 and 3.7.4)
■ The anticipated quantity of tailings that would be produced and managed from the Project; and	Section 3 – Project Description (Subsection 3.7.4)
■ Geochemical characterisation of the tailings, indicating its potential to generate seepage of a poor quality with respect to the *National Water Quality Management Strategy*.	*Geochemistry Report* (Appendix A) (Subsection 7)
Provide a detailed discussion of how the management of tailings from the processing of ore from the Eastern Leases Area differs from the current tailings management at the GEMCO Mine. The presentation of the specifications, capacity and integrity of the proposed tailings storage facilities should include details of the location, layout, factor of safety rating, expected design life and permeability, where relevant	Section 3 – Project Description (Subsection 3.7.4)
2.4.5 Transport Provide details of the road network and any access track construction or upgrade, including: ■ Maximum width of road corridors required for construction and operation;	The EIS addresses transport issues to the extent that they are relevant to this project. It is important to note that the project is unique in that the proponent owns and maintains all of the roads that will be used to access the project site. Section 3 – Project Description (Subsection 3.9) provides an overview of the existing road network that will be used to access the project site. The only roads that will be constructed as part of the project are haul roads. The construction of haul roads (including construction equipment, timing of
■ Plant and machinery required;	
■ Vegetation clearing methods and disposal of plant matter following clearing;	
■ Timeframes for access track and haul road construction and upgrade;	
■ Methods for crossing sensitive areas, such as waterways and/or land units with poor soil recovery potential;	
■ Methods for intersecting linear infrastructure and major roads, where relevant;	

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■ Source of construction inputs and materials for bulk earth works; and	construction, source of construction materials) is described in Section 3 – Project Description. Section 10 – Surface Water (Subsection 10.4.2) describes haul road watercourse crossings. Section 3 – Project Description (Subsection 3.9) describes the proposed relocation of the 4WD access track to Dalumba Bay, and the intersection between the project haul road and the Emerald River Road. Section 3 – Project Description (Subsection 3.7.5) discusses the disposal of plant matter for the construction of haul roads, Section 3 – Project Description (Subsections 3.9.3 and 3.9.4) provides information about transportation on public access roads and internal haul roads.
■ Ongoing provisions for road and access track maintenance, including source and extraction of maintenance inputs and materials.	
Provide details of road use associated with the Project, including: ■ Type, size and number of vehicles required during all phases of the Project;	
■ Quantities of materials to be transported to the Project (e.g. heavy machinery, equipment, fuel, hazardous materials);	
■ Estimated frequency of Project-related vehicle use on public roads; and	
■ Hours of operation, including peak user times.	
Describe the proposed methods and areas for transporting and exporting product, including: ■ Product handling requirements;	Section 3 – Project Description (Subsection 3.7)
■ Storage and laydown areas;	
■ Road and port networks to be utilised by the Project; and	
■ A discussion of the facilities purposes and capability (e.g. Milner Bay Port facility etc.) to meet the transporting and exporting requirements of the Project.	
2.4.6 Water Provide details of the quantity, quality, source (groundwater and/or surface water), storage, and infrastructure requirements for water use for both construction and operation phases of the Project, considering: ■ Dust suppression;	Section 3 – Project Description (Subsection 3.7.5) Section 10 – Surface Water (Subsection 10.5.5)
■ Drinking water;	
■ Mine water;	
■ Waterway crossings or diversion works;	Section 10 – Surface Water (Subsection 10.4.2)
■ Processing circuit; and	No changes to the processing circuit are proposed as part of the project.
■ Any other uses.	Section 10 – Surface Water (Subsection 10.5.5)
A Project water balance and anticipated extraction rates, usage and volumes of water should be provided, where relevant. Specific methods for dewatering should be provided, should any proposed pits fill or intersect possible water holding geological structures. The reporting of the Project water balance in the EIS should be consistent with the *Water Accounting Framework for the Minerals Industry*.	Section 10 – Surface Water (Subsection 10.5)

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2.4.7 Energy Provide relevant information with respect to energy, including but not limited to: ■ Information on the Project's energy requirements, including mining fleet fuels and electricity demand for mine operations;	Section 3 – Project Description (Subsection 3.7.5) Section 12 – Air Quality (Subsection 12.10.1)
■ Details of energy infrastructure requirements, for all components of the Project, including fuel storage; and	Section 12 – Air Quality (Subsection 12.10.1) Section 18 – Health and Safety (Subsection 18.3.3)
■ Describe any initiatives proposed to improve energy efficiency and/or reduce emissions to air.	Section 12 – Air Quality (Subsection 12.10.2)
2.4.8 Noise Provide relevant information with respect to noise, including but not limited to: ■ The expected noise levels associated with the Project construction and operation, including timing and duration;	Section 13 – Noise and Vibration (Subsection 13.6)
■ Location of nearest sensitive receptors (including human and fauna); and	Section 13 – Noise and Vibration (Subsection 13.2)
■ Nominated noise criteria and standards.	Section 13 – Noise and Vibration (Subsections 13.4 and 13.6)
2.4.9 Air Provide relevant information with respect to air quality, including but not limited to: ■ Location of nearest sensitive receptors (including human and fauna);	Section 7 – Terrestrial Ecology (Subsections 7.5 and 7.6.3) Section 13 – Air Quality (Subsection 13.2)
■ Reporting requirements and compliance with relevant health and/or environmental standards;	Section 12 – Air Quality (Subsection 12.4)
■ Air quality target thresholds with reference to regulatory industry-standard, health-related safe-limits, or aspirational parameter levels; and	Section 12 – Air Quality (Subsections 12.4 and 12.6)
■ An inventory of any emissions to air resulting from the Project	Section 12 – Air Quality (Subsection 12.8)
2.4.10 Workforce and Accommodation Provide relevant information with respect to the workforce and accommodation, including but not limited to: ■ Details of the estimated number of people to be employed, skills base required, and likely sources (local, regional, overseas) for the workforce during construction, operation and decommissioning and closure phases;	*Socio-economic Impact Assessment* (Appendix K)
■ The number of people that may be employed to manage or undertake environmental duties on the site, including the specific qualifications and the level of experience with mining or other related activities;	Section 19 – Environmental Management Plan (Section 19.3)
■ Discuss arrangements for transport of workers to and from Project areas, including air services required;	Section 3 – Project Description (Subsection 3.9.3) Section 15 – Socio-economics (Subsection 15.7)
■ Layout of the construction camp and accommodation village with respect to the work sites and mining and processing operations; and	Section 3 – Project Description (Subsection 3.8)
■ Any upgrades or changes to the current accommodation and provision of services, e.g. telecommunications, to provide for contractors and/or workers for the Project.	Section 15 – Socio-economics (Subsection 15.6.1)

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Information on the workforce and accommodation in the EIS should be consistent with and make appropriate reference to the *Environmental Health Fact Sheet 700 Requirements for Mining and Construction Projects.*	This guideline relates to environmental health issues, such as food safety, accommodation arrangements, potable water etc. The project does not involve the construction or expansion of any accommodation facilities. The existing facilities, which are compliant with existing legislation, will be used to house the project workforce.
2.5 Ecologically Sustainable Development When considering the matters to be addressed in the EIS, the NT EPA is required under the NT EPA Act to: (a) Promote ecologically sustainable development (ESD); and (b) Protect the environment, having regard to the need to enable ESD. Accordingly, the assessment of the Project, its potential impacts (positive and negative) and the management measures used to enhance positive and reduce negative impacts will be taken in the context of ESD principles, consistent with the EPBC Act and the *National Strategy for Ecologically Sustainable Development.* Therefore, it is essential that the Proponent demonstrate how it complies with and contributes to the principles and objectives of ESD in the relevant section(s) of the EIS.	These requirements underpin the EIS. They have provided the framework upon which each of the relevant sections and technical appendices of this EIS are based. As a result, these generic requirements have been addressed in all relevant sections of the EIS.
2.6 Alternatives The EIS should describe any feasible alternatives to carrying out the Project. The choice of the preferred option(s) should be clearly explained.	Section 3 – Project Description (Subsection 3.10.1)
Alternatives should include: ■ Not proceeding with the Project; ■ Site selection for all Project components; ■ Mining and processing methods; ■ Management of wastes; ■ Water management; ■ Rehabilitation methods; ■ Methods of product treatment, storage, transport and export; ■ Energy sources for power generation, including renewable energy sources; ■ Alternative life-of-mine schedule; and ■ Consideration of alternative environmental management measures for key risks.	
Discussion should include: ■ Sufficient detail to make clear why a particular alternative is preferred to another;	
■ Adverse and beneficial effects (direct and indirect) of alternatives at national, Territory, regional and local levels and their distributional impact;	
■ The comparison of short (whilst operational), medium (post closure) and relevant long term advantages and disadvantages of the options; and	
■ A comparative description of the potential impacts associated with each viable alternative on matters of national environmental significance protected by controlling provisions of Part 3 of the EPBC Act for the Project.	

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3 Risk Assessment **3.1 Risk Assessment Approach** The EIS should be undertaken with specific emphasis on the identification, analysis and mitigation of risks through a whole-of-project risk assessment. Through this process, the EIS will: ■ Identify and discuss the full range of risks presented by the Project; ■ Identify relevant direct and indirect impacts; ■ Quantify and rank risks so that the reasons for proposed management responses are clear; ■ Identify levels of any uncertainty about estimates of risk and the effectiveness of risk controls in mitigating risk; ■ Explicitly identify those members of the community expected to accept residual risks and their consequences, providing better understanding of equity issues; and ■ Demonstrate that the Project represents best practicable technology.	Section 4 – Environmental Risk Assessment The EIS as a whole addresses the identification, analysis and mitigation of risk.
A number of key risks have been identified through a preliminary assessment of the Project. Each of the identified risks should be addressed by the Proponent in the risk assessment and management process. It is expected that further risks will be identified through the comprehensive risk assessment process required for the EIS. These should be addressed and appropriate management initiatives developed to demonstrate that: ■ The Proponent is fully aware of risks associated with all predictable aspects of the Project; ■ The prevention and mitigation of risks are properly addressed in the design specifications; and ■ The risks can and will be managed effectively during the construction, operation, decommissioning, closure and post-closure phase of the Project.	
Information provided should permit the general reader to understand the likelihood and potential severity of each risk presented by the Project, and any uncertainty around these risks, as well as any uncertainty about the effectiveness of controls. Levels of uncertainty that preclude robust quantification of risk should be clearly acknowledged.	
Risk rankings assigned should be fully justified. Where a risk score associated with the likelihood or consequence of an impact is reduced as a result of proposed mitigation measures, clear justification should be provided for the reduction in score. The adequacy and feasibility of mitigation measures must be demonstrable.	
Sufficient quantitative analysis should be provided to indicate whether risks are likely to be acceptable or tolerable. A comparison can be made with similar ventures in Australia and internationally. Assumptions used in the analyses should be explained.	
3.2 Information Requirements The NT EPA has prepared a series of Environmental Assessment Guidelines to assist in the preparation of EIS documents. Environmental Assessment Guidelines are developed and updated periodically, and should be referenced and referred to when addressing the information requirements in an appropriate section of EIS. Environmental Assessment Guidelines, current at the time of publication of these Terms of Reference, include: ■ *Environmental Assessment Guidelines on Acid and Metalliferous Drainage;*	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.3)
■ *Guidelines for Assessment of Impacts on Terrestrial Biodiversity;*	Section 7 – Terrestrial Ecology (Subsection 7.3.2)

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■ *Guidelines on Conceptual Site Models;*	This guideline relates to the development of a conceptual site model for the purposes of licensing or approvals under the *Water Act* or the *Waste Management and Pollution Control Act* (WMPC Act). As discussed in Section 2 – Regulatory Framework (Subsection 2.3), mining activities are exempt from regulations under the *Water Act*. Section 17 – Non-mining Waste discusses the proponent's existing waste management systems which are licensed as appropriate under the WMPC Act. This guideline, and the development of a conceptual site model is therefore not directly relevant for this project. Nevertheless, a conceptual site model has been prepared for the conceptual water management system, and is presented in Section 10 – Surface Water (Figure 10-11).
■ *Guidelines for the Preparation of an Economic and Social Impact Assessment;*	Section 15 – Socio-economics (Subsection 15.2)
■ *Guidelines for Consultants Reporting on Environmental Issues; and*	This guideline relates to the investigation, monitoring and remediation of land and water and is not relevant to this EIS, given that the project is located on a greenfield site
■ *Guidelines on Environmental Offsets and Associated Approval.*	Section 7 – Terrestrial Ecology (Subsection 7.3.2)
3.3 Cumulative Impacts Cumulative impacts can arise from compounding activities of a single operation or multiple mining and processing operations, as well as the aggregation and interaction of mining impacts with other past, current and future activities that may not be related to mining.	Cumulative impacts are addressed, to the extent that they are relevant, in individual sections of the EIS. The existing mine is the only other activity on Groote Eylandt with the potential to give rise to cumulative impacts with the project.
An assessment of cumulative environmental impacts should be undertaken that considers the potential impact of the Project in the context of existing developments, and reasonably foreseeable future developments, to ensure that any potential environmental impacts are not considered in isolation. The extent of cumulative impacts to be considered depends on the nature of the environmental issue. The risk assessment should consider and discuss cumulative assessment, where relevant, and account for impacts on an appropriate scale, such that:	
■ Landscape change originates not only from single projects and management actions, but also from complex and dynamic interactions of multiple past, present and future management actions;	

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■ Biophysical, social and economic change accumulates through additive or interactive (or synergistic) processes. The aggregate impact of multiple actions on the environment can be complex and may result in impacts that are more significant because of interactive processes; and	Cumulative impacts are addressed, to the extent that they are relevant, in individual sections of the EIS. The existing mine is the only other activity on Groote Eylandt with the potential to give rise to cumulative impacts with the project.
■ Any given action does not operate in isolation. The most significant changes are often not the result of the direct effects of an individual action, but from the combination of multiple minor effects over the accumulation of time.	
Appropriate consideration of the impacts on the general environment, ecosystems and matters of national environmental significance could be permanent. If the impacts are not permanent, a description of how long it will take before recovery from any impacts and identify how soon restoration of habitat could be achieved to reinstate ecosystem function.	
3.4 Water **3.4.1 Key Risks** The EIS should consider risks to surface and groundwater, and potential impacts on regional hydrology and dependent ecosystems from the Project. The EIS should include a detailed assessment of the risks to demonstrate that the Proponent is aware of and has provided appropriate mitigation for the following environmental objectives: ■ Available water supplies will be sufficient to fulfil the Project needs over the predicted life-of-mine, without causing environmental or social impacts; and	Section 10 – Surface Water (Subsection 10.5.5)
■ Water resources are protected both now and in the future, such that ecological health and land uses, and the health, welfare and amenity of people are maintained.	Section 10 – Surface Water (Subsection 10.6)
3.4.2 Information Requirements ■ Details relating to existing water resource conditions and monitoring should be provided, including discussion and data relating to: – local and regional aquifer properties; – connectivity between groundwater and surface water; – results from baseline water quality and hydrology monitoring programs, where available and relevant; – an estimate of annual recharge to regional aquifer systems; and – changes to surface and groundwater systems (hydrology, quality and quantity) as a result of previous exploration, mining and/or mining-related activities.	Section 9 – Groundwater (Subsection 9.3) Section 10 – Surface Water (Subsection 10.2)
■ Provide a detailed description of site and regional surface water catchments, waterways, springs and regional groundwater resources;	
■ Describe the environmental values of the surface waterways and groundwater aquifers potentially affected;	
■ Describe water quality, flows and existing water users potentially impacted by the Project;	Section 9 – Groundwater (Subsections 9.3 and 9.4) Section 10 – Surface Water (Subsection 10.2)
■ Discuss how the Project will impact on the current water management practices;	Section 10 – Surface Water (Subsection 10.5)
■ Details of proposed groundwater extraction, including treatment, storage, reuse and disposal options and impacts to the overall mine water balance;	Section 9 – Groundwater (Subsections 9.3 and 9.4)
■ Type, size and location of water storage and treatment facilities, if required;	Section 10 – Surface Water (Subsection 10.5.3)
■ Details of any infrastructure for the monitoring of water resources, such as gauging stations; and	Section 9 – Groundwater (Subsections 9.4 and 9.5) Section 10 – Surface Water (Subsection 10.7)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
■ Describe site and, if relevant, regional hydrogeology to enable the prediction of potential impacts of the Project on water resources and their features adjacent to mining areas, including drawdown cones and pollution pathways.	Section 9 – Groundwater (Subsection 9.4)
3.4.3 Assessment of Risks The EIS should include an assessment of risks to surface and/or groundwater resources at an appropriate spatial scale as a result of the Project. In particular, the EIS should identify and assess the risks: ■ To existing surface and groundwater quality and quantity as a result of the Project, with specific reference to the Project components identified in Section 2.4.6;	Section 4 – Environmental Risk Assessment Section 9 – Groundwater (Subsection 9.4) Section 10 – Surface Water (Subsection 10.6)
■ Of potential uncontrolled release or passive discharge of contaminants, such as hydrocarbons, to surface and/or groundwater resources as a result of the Project components identified in Section 2.4;	Section 9 – Groundwater (Subsection 9.4) Section 10 – Surface Water (Subsection 10.6)
■ Of potential impacts to adjacent areas and vegetation, including surface waterways, from the drawdown of groundwater, including the volume of groundwater expected to be intercepted and/or extracted during the Project;	Section 7 – Terrestrial Ecology (Subsections 7.5.2 and 7.6.4) Section 9 – Groundwater (Subsection 9.4.6)
■ Associated with the new infrastructure or disturbance of soils altering the hydrology and rates of erosion and sedimentation of waterways;	Section 10 – Surface Water (Subsection 10.6)
■ Associated with slope or erosion stability;	
■ The potential impacts to regional water resources, and dependent ecosystems, from the development, operation and closure of the Project, and mine components;	
■ Of impact of major weather events (e.g. 5 to 100 year average recurrence interval [ARI]) and extreme weather events (e.g. 100 year ARI, or greater) on water management and infrastructure, including contingency management; and	
■ Of any additional impacts to surface and/or groundwater resulting from changes to the Project.	Section 9 – Groundwater (Subsection 9.4) Section 10 – Surface Water (Subsection 10.6)
The influence of seasonality should be discussed, where relevant. The risk assessment should give consideration to the short (whilst operational), medium (post closure and under institutional control) and long term (post-institutional control) timeframes of the Project.	
A conceptual site model describing potential sources, pathways, receptors, and fate of any potentially contaminated waters from the Project, and Project components (Section 2.4), is to be provided in the EIS. The model should be of sufficient detail for the general reader to understand the source(s) of potential contaminants, the mechanism(s) of their release, the pathway(s) for transport, and the potential for human and ecological exposure to these potential contaminants.	Section 9 – Groundwater and Section 10 – Surface Water provide a detailed assessment of the water environment relevant to the project. Mining activities with the potential to affect water quality are described in detail, along with the potential mechanisms and pathways by which existing water quality and environmental values could be affected. An assessment of the potential project impacts on groundwater and surface water values, including any human or ecological receptors, is presented in Section 7 – Terrestrial Ecology, Section 8 – Aquatic Ecology, Section 9 – Groundwater and Section 10 – Surface Water.

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
The minimum data required to support the model should include, but should not be limited to: ■ Relevant laboratory and field testing to characterise the potential physicochemical properties of mine products and infrastructure (e.g. stockpiles, etc.);	Section 10 – Surface Water (Subsection 10.4) *Geochemistry Report* (Appendix A) (Subsection 6)
■ Material volume and mass of potential contaminant sources;	Section 3 – Project Description (Subsection 3.7.4) Section 18 – Health and Safety (Subsection 18.3)
■ Hydrogeological characterisation (e.g. groundwater occurrence, direction and rate of flow, etc.);	Section 9 – Groundwater (Subsection 9.4.3) *Groundwater Report* (Appendix F) (Subsection 7)
■ Hydrologic characterisation (e.g. surface water flow, seasonality etc.);	Section 10 – Surface Water (Subsection 10.2) *Surface Water Drainage Report* (Appendix G) *Baseline Surface Water Monitoring Report* (Appendix H)
■ Baseline water quality (i.e., major cations and anions, metals, metalloids, acidity/alkalinity, etc.) of receiving waters;	Section 10 – Surface Water (Subsection 10.2) *Baseline Surface Water Monitoring Report* (Appendix H)
■ Biological receptors and their habitats; and	Section 10 – Surface Water (Subsection 10.2.3) Section 8 – Aquatic Ecology
■ Other complementary technical studies, at an appropriate temporal and spatial scale, used to develop the model, such as: – geology; – hydrology; – hydrogeology; – geochemistry; – biology; – meteorology; and – engineering/geotechnical.	Section 3 – Project Description (Subsection 3.5) Section 7 – Terrestrial Ecology Section 8 – Aquatic Ecology Section 11 – Climate *Geochemistry Report* (Appendix A) *Surface Water Drainage Report* (Appendix G) *Baseline Surface Water Monitoring Report* (Appendix H)
■ An appropriately qualified and experienced person should be involved with the supervision and interpretation of test results and the development of the model. Appropriate statistical design details including the number of samples, sampling site selection procedures and QA/QC protocols to support the development of the model should be provided and justified.	Noted. The data collection and data analysis methodologies used to support each technical study that informed the conceptual site model are detailed in the respective technical reports presented as appendices to the EIS. Refer to Section 23 – Study Team, which also includes a list of contributors to the EIS, and their qualifications.

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
3.4.4 Mitigation ■ The EIS should contain a draft Water Management Plan (WMP) that outlines clear and concise measures to mitigate likely impacts of the Project on water resources. All mitigation and monitoring measures in the WMP should be adequately detailed to demonstrate best practice management and that environmental values of receiving waters will be maintained. The WMP must include but not be limited to measures that:	Section 10 – Surface Water (Subsection 10.8.1) and Section 19 – Environmental Management Plan (Subsection 19.4.6) present an outline of the WMP that will be developed for the project
■ Avoid contamination of surface or groundwater resources;	The mitigation and monitoring measures relating to surface water are presented in Section 10 – Surface Water (Subsections 10.6 and 10.7) and Section 19 – Environmental Management Plan (Subsection 19.4.6). The mitigation and monitoring measures relating to groundwater are in Section 9 – Groundwater (Subsections 9.4 and 9.5) and Section 19 – Environmental Management Plan (Subsection 19.4.5).
■ Ensure the protection and resilience of water dependent ecosystems;	Section 9 – Groundwater (Subsection 9.4.6) details the measures proposed to ensure the protection of groundwater dependent ecosystems. Section 10 – Surface Water (Subsections 10.3 to 10.7) details the measures proposed to ensure the protection of surface water dependent ecosystems.
■ Protect water quality and levels for existing and future users of bores and/or surface waterways, including the potable supplies;	The potential project impacts on water quality and levels in groundwater bores is discussed in Section 9 – Groundwater (Subsection 9.4.5). The potential project impacts on watercourse levels and quality are discussed in Section 10 – Surface Water. Mitigation and monitoring measures are discussed in Section 10 – Surface Water (Subsections 10.6 and 10.7), and Section 19 – Environmental Management Plan (Subsection 19.4.6).
■ Avoid the exposure of sensitive biological receptors to contaminants or water of a poor quality which may be harmful; and	Section 10 – Surface Water (Subsections 10.3 to 10.7) Section 19 – Environmental Management Plan (Subsection 19.4.6)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
■ Treat and manage domestic wastewater and sewage.	Section 17 – Non-mining Waste (Table 17-1)
■ The WMP should be closely related to but separate from an Erosion and Sediment Control Plan (ESCP) for the Project. Measures to be addressed in both the WMP and the ESCP should include options for minimising water use, management and treatment of clean and contaminated water, including site stormwater, erosion and sediment control measures. It is essential that appropriate consideration of potential contaminant sources and the management is provided, such that the environment is protected from pollution in short (whilst operational), medium (post closure and under institutional control) or long term (post-institutional control).	The ESCP is outline in Section 10 – Surface Water (Subsection 10.8.2) and Section 19 – Environmental Management Plan (Subsection 19.4.6). The proposed measures for the management of erosion and sediment are discussed in Section 10 – Surface Water (Subsections 10.3, 9.4 and 10.6) and Section 19 – Environmental Management Plan (Subsection 19.4.6).
3.4.5 Monitoring ■ The WMP and ESCP should outline details of monitoring programs that would be implemented throughout the life of the Project to determine the effectiveness of the mitigation measures. The monitoring programs should identify clear thresholds and contingency measures should construction and operational activities affect water resources.	Section 9 – Groundwater (Subsection 9.5) Section 10 – Surface Water (Subsection 10.7) Section 19 – Environmental Management Plan (Subsection 19.4.6)
A summary of the surface and groundwater quantity and quality reporting requirements and monitoring programs used to evaluate and report on the effectiveness of the mitigation measures (Section 3.4.4) should consider: ■ Methods to monitor the impacts of the Project on surface and groundwater quality and quantity; and	Section 9 – Groundwater (Subsection 9.5) Section 10 – Surface Water (Subsections 10.7 and 10.8) Section 19 – Environmental Management Plan (Subsections 19.4.5 and 19.4.6)
■ Monitoring for leaks or spills of materials from storage facilities (including tailings storage facilities) and transport operations to ensure protection of local soils, aquifers, environments, workers and the general public.	Section 9 – Groundwater (Subsection 9.5) Section 10 – Surface Water (Subsections 10.7 and 10.8) Section 17 – Non-mining Waste (Subsection 17.3.4) Section 19 – Environmental Management Plan (Subsections 19.4.5 and 19.4.6)
■ Provisions to notify and respond to environmental and human health risks associated with water quality, or other water related emergency, should be discussed and provided in the draft EIS.	Section 10 – Surface Water (Subsection 10.8.1) Section 17 – Non-mining Waste (Subsection 17.3.4) Section 19 – Environmental Management Plan (Subsections 19.4.5 and 19.4.6)
■ Where interpretation of the monitoring data or other observations have detected the potential for or actual adverse trends in performance or impacts, detail what remedial/corrective strategies and actions would likely be implemented. Include scopes of work where appropriate together with a commitment to an implementation timetable and any modifications to the monitoring program required in order to assess the performance of the actions.	Section 10 – Surface Water (Subsection 10.8.1) Section 19 – Environmental Management Plan (Subsection 19.4.6))

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
3.5 Biodiversity **3.5.1 Key Risks** The Project is of a size and scale that biodiversity values, conservation status, diversity, geographic distribution or productivity of local native flora or fauna species or ecosystems may be degraded by Project actions. The Project may result in one or more of the following significant impacts to species or communities listed as threatened under the EPBC Act and/or TPWC Act: ■ Long-term decrease in the size of an important population of a listed threatened species or community; ■ Adverse effects on habitat critical to the survival of a species or community; ■ Fragmentation of an existing important population into two or more populations; ■ Reduced area of occupancy of an important population or community; and/or ■ Modification, destruction, removal or isolation of the availability or quality of habitat, to the extent that a threatened species or community is likely to decline.	Noted. These impacts are considered in: Section 4 – Environmental Risk Assessment Section 7 – Terrestrial Ecology Section 8 – Aquatic Ecology *Terrestrial Ecology Report* (Appendix C) *Aquatic Ecology Report* (Appendix D)
The EIS should include a detailed assessment of the risks to demonstrate that the Proponent is aware of and has provided appropriate mitigation to ensure that the ecological character and natural biological diversity of aquatic and terrestrial ecosystems of Groote Eylandt, including ecological processes, are maintained.	Section 7 – Terrestrial Ecology (Subsection 7.7) Section 8 – Aquatic Ecology (Subsections 8.6 and 8.7)
3.5.2 Information Requirements Vegetation community and habitat mapping should be undertaken across the Project footprint. The mapping should be of a standard that sufficiently identifies any areas that have already been subject to clearing activities or disturbance previously (if any) and to identify areas of vegetation that are proposed to be cleared. Assessment should be undertaken within a suitable buffer distance along the length of the project area, at an intensity appropriate to identify significant or sensitive vegetation types. Mapping should include identification of any significant or sensitive vegetation types, at a scale appropriate to the assessment of risk to their biodiversity values. With reference to mapping, provide:	Section 7 – Terrestrial Ecology (Subsection 7.5 and Figures 7-3 to 7-5)
■ Details of soils and topography on and adjacent to the Project area;	Section 6 – Mine Rehabilitation and Closure
■ Vegetation communities on and adjacent to the Project area: – a broad overview of the dominant vegetation communities; – weed species, including weed species declared under the NT *Weeds Management Act*; – for each vegetation community, indicate: distribution and abundance; conservation status with respect relevant national and territory legislation.	Section 7 – Terrestrial Ecology (Subsections 7.3.2, 7.5.1 and 7.5.2 and Figure 7-4)
■ Potentially significant ecosystems, including, but not limited to: – riparian vegetation; – important habitat corridors; – monsoon forests; – areas of conservation significance; and – geological and other features that may support unique ecosystems (e.g. escarpments, gorges, gullies).	Section 7 – Terrestrial Ecology (Subsections 7.5.1 and 7.5.2 and Figure 7-4)
■ Details of listed threatened species and communities that are likely to be present in the vicinity of the site, including detail of the scope, timing (survey season/s) and methodology for studies or surveys used to provide information on the listed threatened species and their habitat at the site (and in areas that may be impacted by the Project); and	Section 7 – Terrestrial Ecology (Subsections 7.4 and 7.5 and Figures 7-1 to 7-5)
■ Description of the presence, or likely occurrence, of introduced and invasive species (both flora and fauna) in the region.	Section 7 – Terrestrial Ecology (Subsection 7.5.4)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
Provide specific reference to the EPBC Act and TPWC Act with all threatened species, invasive species, ecological communities, and migratory species listed under the EPBC Act that are likely to be impacted by the Project. At a minimum, the following listed migratory and threatened species and communities, protected under Part 3 of the EPBC Act and/or the TPWC Act need to be addressed, as appropriate:	Section 7 – Terrestrial Ecology (Subsections 7.3.1 and 7.3.2) Section 8 – Aquatic Ecology (Subsections 8.3.1 and 8.3.2)
■ Northern quoll (*Dasyurus hallucatus*);	Section 7 – Terrestrial Ecology (Table 7-3)
■ Masked owl (northern) (*Tyto novaehollandiae kimberli)*;	
■ Brush-tailed rabbit rat (*Conilurus penicillatus*);	
■ Northern hopping-mouse (*Notomys aquilo*);	
■ Yellow-spotted monitor (*Varanus panoptes*);	
■ Merten's water monitor (*Varanus mertensi*);	
■ Pale field rat (*Rattus tunneyi*);	*Terrestrial Ecology Report* (Appendix C)
■ Dwarf sawfish (*Pristis clavata*);	Section 8 – Aquatic Ecology (Table 8-1)
■ Green sawfish (*Pristis zijsron*);	
■ Large tooth sawfish (*Pristis pristis*);	Section 8 – Aquatic Ecology (Subsection 8.5.5)
■ Red goshawk (*Erythrotriorchis radiatus*);	*Terrestrial Ecology Report* (Appendix C)
■ White bellied sea eagle (*Haliaeetus leucogaster*);	Section 7 – Terrestrial Ecology (Subsection 7.5.5)
■ Rainbow bee-eater (*Merops ornatus*);	
■ Flatback turtle (*Natator depressus*);	Section 8 – Aquatic Ecology (Table 8-1)
■ Green turtle (*Chelonia mydas*);	
■ Hawksbill turtle (*Eretmochelys imbricata*);	
■ Water mouse (*Xeromys myoides*); and	*Terrestrial Ecology Report* (Appendix C)
■ Plains death adder (*Acanthopis hawkei*).	
Where surveys are proposed for the above species, the survey methods provided by the Australian and Northern Territory Governments should be used. Show consideration of relevant recovery plans and/or general survey guidelines, including, but not limited to: ■ *Survey Guidelines for Australia's Threatened Mammals. EPBC Act Survey Guidelines 6.5;*	*Terrestrial Ecology Report* (Appendix C) (Subsection 3.1.2)
■ *Survey Guidelines for Australia's Threatened Birds;*	
■ *National Recovery Plan for the Northern Quoll Dasyurus hallucatus;*	*Terrestrial Ecology Report* (Appendix C) (Subsection 6.3.1)
■ *Referral guidelines for the endangered northern quoll, Dasyurus hallucatus*	*Terrestrial Ecology Report* (Appendix C) (Subsection 3.4.8)
■ *National Multi-species Recovery Plan for the Carpentarian Antechinus Pseudantechinus mimulus, Butlers Dunnart Sminthopsis butleri, and Northern Hopping-mouse Notomys aquilo 2004-2008;*	*Terrestrial Ecology Report* (Appendix C)
■ *Survey protocol for the northern hopping mouse Notomys aquilo; and*	*Terrestrial Ecology Report* (Appendix C) (Subsection 3.4.8)
■ *Survey protocol for masked owls in the NT Tyto novaehollandiae.*	*Terrestrial Ecology Report* (Appendix C)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
Where the presence and relative density of Northern hopping-mouse is evaluated for signs such as spoil-heaps, particular care is required to differentiate these from signs of other burrowing species such as Delicate Mouse (*Pseudomys delicatulus*).The EIS should detail how this was achieved in a robust and repeatable manner.	*Terrestrial Ecology Report* (Appendix C) (Subsection 3.4.8)
The EIS should include the results of a comprehensive baseline fauna and flora survey of areas identified for disturbance. Any areas of vegetation adjacent that may be at risk of indirectly should be included in the surveys. The fauna surveys should be undertaken by a suitably qualified and experienced person that has demonstrated experience in the surveying for and the identification of species in the Northern Territory. The survey effort must be sufficient to provide a representative sample of the biodiversity across the variety of habitats occurring at the site and must be undertaken consistent with the current Northern Territory survey guidelines.	Section 7 – Terrestrial Ecology (Subsection 7.4) Section 8 – Aquatic Ecology (Subsection 8.4)
In undertaking the surveys, personnel should be aware of the potential for short range endemic species and/or undescribed species to occur within the area to be impacted. The NT EPA should be consulted to seek further advice in the event that the surveys identify any short range endemic species, distinctive individuals or individuals whose characteristics do not match recently published descriptive keys.	
3.5.3 Assessment of Risk Provide a detailed risk assessment outlining the risks to biodiversity values as a result of the Project. The EIS should include references to relevant research and relevant statutory plans, such as action plans, recovery plans and threat abatement plans, when assessing the risks.	Section 4 – Environmental Risk Assessment Section 7 – Terrestrial Ecology Section 8 – Aquatic Ecology *Terrestrial Ecology Report* (Appendix C)
■ Identification of all situations where construction and/or operation activities could potentially interact with listed threatened species and short range endemic species. Where a risk has been identified, the EIS should include a discussion of the severity of those risks to individuals and regional populations;	
■ Analysis of the presence and potential impacts (direct, indirect and consequential) upon threatened fauna including consideration, where relevant, of vegetation clearance, habitat fragmentation, altered hydrology, water quality impacts, erosion and sedimentation impacting on creeks, soil compaction, inappropriate/ineffective rehabilitation, groundwater contamination, impacts on surface and groundwater systems, waste material, risks associated with the transport or storage of hazardous chemicals, weed and pest invasion, noise and dust impacts;	
■ A detailed assessment of any likely impact that the Project may facilitate on listed threatened species and species of conservation significance at the local, regional, state, and national scale;	
■ A detailed assessment of any likely impact that the Project may have on living aquatic resources specifically fish and invertebrates;	
■ Analysis of the potential impact of the Project to vegetation at a local and regional scale, including the potential for ongoing indirect impacts as a result of edge effects, weed incursion or other processes exacerbated through construction or operation of the Project; and	
■ A detailed assessment of the potential of the Project to introduce and/or increase the presence of introduced and invasive species (both flora and fauna) in the region, and the potential impacts of such species. Show consideration of relevant Threat Abatement Plans , such as: – *Threat Abatement Plan for Predation by Feral Cats;* – *Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs;* – *Threat Abatement Plan for the Biological Effects, including Lethal Toxic Ingestion, caused by Cane Toads;* and – *Threat Abatement Plan to reduce the Impacts on Northern Australia's Biodiversity by the Five Listed Grasses.*	Any relevant Threat Abatement Plans have been discussed in the *Terrestrial Ecology Report* (Appendix C). Note that a number of the listed plans are not relevant to Groote Eylandt (e.g. there are no feral pigs on Groote Eylandt).

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
3.5.4 Mitigation The EIS should contain a detailed Biodiversity Management Plan (BMP) that outlines clear and concise methods to mitigate likely impacts to biodiversity. All mitigation and monitoring measures should be in accordance with best practice advice from relevant Northern Territory and Australian Government advisory agencies and focus on: ■ Potentially significant impacts to the biodiversity on-site as a whole; ■ Mitigating the impacts to vegetation; ■ Living aquatic resources, including fish and invertebrates; ■ Rare or threatened species at risk of being adversely impacted; and ■ Weed control measures and hygiene protocols as required under the *Weeds Management Act*.	Section 7 – Terrestrial Ecology (Subsection 7.7.2)
The draft EIS should at least include management measures in relation to ■ Procedures to be adopted during vegetation clearing, including wildlife rescue procedures;	
■ Fire regimes and management; and	
■ Weed and feral animal management.	
The aim of these management measures is to mitigate and monitor impacts to biodiversity and threatened species. Management measures should be prepared by a suitably qualified expert that has demonstrated experience in the mitigation and monitoring of adverse impacts to biodiversity and threatened species.	Section 7 – Terrestrial Ecology (Subsection 7.7.2)
The EIS must provide information on proposed safeguards and mitigation measures to deal with the relevant potential impacts of the action on listed threatened species and listed migratory species. Detail preventative, management and treatment strategies used to minimise the impacts of the Project on native flora and fauna including, but not limited to, the risks identified above.	Section 7 – Terrestrial Ecology (Subsection 7.7)
Specific and detailed descriptions of proposed measures must be provided and substantiated, based on best available practices for each threatened species that may be impacted by the Project and must include the following elements: ■ A description of proposed safeguards and mitigation measures to deal with relevant potential impacts of the action, including mitigation measures that are currently or to be taken by the Territory government or the proponent; ■ Assessment of the expected or predicted effectiveness of the mitigation measures; and ■ Any statutory or policy basis for the mitigation measures.	
Proposed mitigation measures must be incorporated in relevant sections of the Environmental Management Plan (EMP) (Section 4).	Section 19 – Environmental Management Plan (Subsection 19.4.4)
3.5.5 Monitoring The BMP should include details of monitoring that is proposed to be undertaken to monitor the effectiveness of the mitigation measures proposed, including the methodology for monitoring the impacts to biodiversity. Where relevant, contingency measures to be implemented in the event that monitoring indicates that mitigation measures are ineffective, should be outlined.	Monitoring of rehabilitation to confirm the establishment of native vegetation and recolonisation by fauna species is the key monitoring for biodiversity. Section 6 – Mine Rehabilitation and Closure (Subsection 6.2.4) describes monitoring that is proposed to be undertaken.

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
3.5.6 Offsets The *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* requires residual significant impacts to be offset, with a focus on direct offsets. Offsets are measures that compensate for the residual impacts of an action on the environment, after avoidance and mitigation measures are taken. Where appropriate, offsets are considered for assessment and approval under the EPBC Act. The suitability of a proposed offset is considered as part of the decision to approve or not approve a proposed action under the EPBC Act.	*Biodiversity Offsets Strategy* (Appendix E) Section 7 – Terrestrial Ecology (Subsection 7.7.3) Section 6 – Mine Rehabilitation and Closure (Subsection 6.2.4)
The EIS should provide information on: ■ Any identified impacts or detriments that cannot be avoided, reduced or mitigated at reasonable costs and whether these impacts could be considered as 'significant' under the EPBC Act;	
■ Risks of failure of management actions (such as rehabilitation, weed control, etc.) and uncertainties of management efficacy should be identified; and	
■ Proposed offsets for residual significant impacts to listed threatened species or ecological communities and listed migratory species and an explanation as to how these proposed offsets meet the requirements of the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* and other relevant guidance.	
3.6 Human Health and Safety **3.6.1 Key Risks** The EIS should include an assessment of the risks to human health and safety associated with the construction, operation and decommissioning and closure of the various components of the Project, and the storage and transport of materials to and from the Eastern Leases Area.	Section 18 – Health and Safety (Subsection 18.2.1)
3.6.2 Information Requirements ■ Identify all hazards, including physical hazards, noise and emissions, as a consequence of the Project; and	Section 18 – Health and Safety (Subsection 18.3.3)
■ Identify sensitive receptors, including their location and patterns of activity and occupation, with the potential for exposure to these hazards because of the Project.	Section 18 – Health and Safety (Subsection 18.3.2)
3.6.3 Assessment of Risks Aspects to be discussed include: ■ Health and safety risks for the workforce and the general public for the duration of the Project including post-closure;	Section 18 – Health and Safety (Subsection 18.3)
■ Safety risks associated with fire, including combustible materials and bushfire;	Section 18 – Health and Safety (Subsections 18.3.3 and 18.3.4)
■ Potential risks relating to the environment and public health and safety from the transportation of ore, explosives (bulk emulsion) and consumables, including dangerous goods, on public roads, and any other Project components or activities.	Section 18 – Health and Safety (Subsection 18.3.3)
3.6.4 Mitigation and Monitoring Detail preventative, management, treatment and monitoring strategies used to minimise the impacts of the Project on human health and safety. Outline environmental (including health and safety) management strategies necessary for human health and safety, and describe how these strategies will be incorporated into the EMP (Section 4).	Section 18 – Health and Safety (Subsections 18.2, 18.3.3, and 18.3.4)
Describe the procedures that would be developed for the project in relation to emergency planning. Such procedures would incorporate management of all emergencies that may impact on the facility, its surrounds, personnel or the public, and would detail responsibilities and liabilities in the event of an emergency.	

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
The hazard and risk analysis will identify critical areas that need to be addressed in management plans, monitoring programs, and contingency and emergency plans and should include: ■ Mitigation measures to address safety risks identified in Section 3.6.3;	Section 18 – Health and Safety (Subsections 18.2, 18.3.3, and 18.3.4)
■ Measures to prevent third party interference with the Project;	
■ Safeguards for minimising the likelihood of bushfire, and fire response plans;	
■ Safeguards, management and monitoring strategies to be implemented to minimise potential transport impacts, including: – safety measures to be used to reduce transport risks (e.g. safety awareness measures); – methods for securing loads; – consultation with local communities affected by transport impacts; – traffic management; – measures to reduce any road traffic nuisance impacts (e.g. noise, dust, light); and – management of driver fatigue.	Section 3 – Project Description (Subsection 3.9) Section 18 – Health and Safety (Subsections 18.2 and 18.3.3)
3.7 Socio-economic **3.7.1 Key Risks** The Project has the potential to cause positive and/or negative impacts on the regional, Territory and national economies, and the social well-being of the population. Operations and activities associated with the life of the Project have the potential to change social demographic, cultural and economic elements. As a result potential economic and social benefits may not be optimised and costs may not be fully understood and taken into consideration.	Section 15 – Socio-economics
3.7.2 Information Requirements The EIS should include a balanced summary of the Project's economic value (positive and negative) to the regional, Territory and national economies, in terms of direct and indirect effects on employment, income and production. The following are suggestions that may assist with highlighting the economic value of the Project and are not intended to result in the inappropriate disclosure of confidential information.	Section 15 – Socio-economics (Subsection 15.8)
■ A summary of the Project's economic feasibility;	Section 15 – Socio-economics describes the economic benefits and economic feasibility of the project.
■ Details of the financial capacity to implement the Project, the significance of potential risks to project implementation and associated proposed mitigation measures, including the capacity to cost for mine closure and care and maintenance activities;	
■ Estimated total project revenue for the duration of the Project (to provide the economic scale of the Project);	
■ Total contribution to Gross State Product and Gross Domestic Product over the economic life of the Project;	
■ Opportunities available to regional centres based on the activity generated by the Project (construction, rehabilitation and operation);	
■ Estimated overall tax;	
■ Estimated capital and annual operational expenditure;	
■ Estimated workforce and contractor numbers by occupational classification;	*Socio-economics Impact Assessment* (Appendix K) (Subsection 6.2)
■ Overall employment training proposed during commencement, construction and operations;	*Socio-economics Impact Assessment* (Appendix K) (Subsections 5 and 6)
■ Planned Indigenous employment, training and other project participation;	Section 15 – Socio-economics (Subsection 15.6.2)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
■ Expected level of overseas recruitment;	There is no proposal to specifically recruit the construction workforce from overseas. The project operations workforce will be drawn from the workforce of the existing mine and there will be no change in the size of the proponent's workforce.
■ Availability of goods and services;	The project is an additional mining area that will be operated as part of the existing mine, rather than an independent mine. It will consequently make use of the existing supply chain that services the existing mine.
■ Estimates of the quantity and value of production/exports relating to the Project, including expected reduction in revenue should the Project not proceed;	The project will not change the production rate at the existing mine, but will extend the life of the mine. The economic benefits arising from extending the life of the mine are described in Section 15 – Socio-economics.
■ Community and economic value of any residual infrastructure, such as roads, following the life of the Project; and	*Socio-economics Impact Assessment* (Appendix K) (Subsection 7.2.3)
■ Other contributions to local communities, including Traditional Owners.	Section 15 – Socio-economics (Table 15-4)
The EIS should include a balanced summary of the Project's social value (positive and negative) on a regional, Territory, national and international scale. A brief description of the current population, demography and social aspects of the region affected by the Project should be provided in the EIS. This should be done through community consultation, historic research and field survey. The EIS should include information on:	Section 15 – Socio-economics (Subsection 15.5)
■ Key stakeholders;	Section 5 – Consultation (Subsection 5.5.1) Section 15 – Socio-economics (Subsection 15.5)
■ Regional community structures and vitality (e.g. demography, health, education and social well-being, access to services, housing);	Section 15 – Socio-economics (Subsection 15.5)
■ Social amenity; and	
■ The number and capacity of existing human services to support the Project: – skills audit of affected communities; – workforce characteristics; and – accommodation type and quantity.	Section 15 – Socio-economics. Note that the project operations workforce will be drawn from the workforce of the existing mine and there will be no change in the size of the proponent's workforce.
3.7.3 Assessment of Risks An Economic and Social Impact Assessment (ESIA) should be conducted. The ESIA should: ■ Document the economic and social impacts of the Project on the region and more broadly, where relevant;	Section 4 – Environmental Risk Assessment Section 15 – Socio-economics (Subsections 15.7 and 15.8)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
■ Assess the risks of the Project not realising its projected economic and social benefits;	Section 15 – Socio-economics
■ Encourage development of new and/or expansion of existing businesses in the locality;	Section 15 – Socio-economics (Subsection 15.6)
■ Foster sustainable development and community wellbeing;	Section 15 – Socio-economics
■ Provide for appropriate contingencies to protect the community, local business owners and residents in the event of forced, unpredicted or early closure; and	
■ Discuss the risks of the Project, related infrastructure and associated workforce negatively impacting on identified economic and social issues in the region.	
3.7.4 Mitigation and Monitoring The EIS should address any risks identified in the ESIA and should: ■ Describe how the Proponent proposes to manage any identified economic, social, or relevant cultural risks from the Project, or its associated workforce;	Section 15 – Socio-economics (Subsection 15.8)
■ Describe how potential local and regional business and employment opportunities related to the Project will be identified and managed;	
■ Include a mechanism for monitoring and reporting any identified potential socio-economic and cultural impacts;	
■ Include measures to mitigate negative economic and social impacts on the locality and region;	
■ Provide outcome and assessment criteria that will give early warning that management and mitigation measures are not achieving the outcomes and benefits expected and identified by the Proponent; and	Section 15 – Socio-economics (Subsection 15.8) describes the various monitoring programs that are currently undertaken to monitor socio-economic impacts. These monitoring programs will be extended to include the project.
■ Provide a stakeholder communications strategy including identification of, and ongoing consultation and negotiations with, all relevant stakeholders, ensuring the full range of community viewpoints are sought and included in the EIS	Section 15 – Socio-economics (Subsection 15.8)
3.8 Historic and Cultural Heritage **3.8.1 Key Risks** The EIS should consider the risk of damage to or degradation of sites or items which have historic or cultural heritage values caused by Project activities.	Section 16 – Archaeology
3.8.2 Information Requirements The EIS should outline the cultural and heritage significance of any sites located during archaeological investigations on or near the Project area or that could be impacted by the Project activities. The EIS should include the results of searches on the Northern Territory Government database and identify any sites or places protected or nominated for protection under the following legislations:	Section 16 – Archaeology (Subsections 16.3 and 16.4)
■ *Aboriginal and Torres Strait Island Heritage Protection Act 1984;*	Section 16 – Archaeology (Subsection 16.3.2)
■ *Environment Protection and Biodiversity Conservation Act 1999;*	Section 16 – Archaeology (Subsection 16.3.1)
■ *Heritage Act;* and	Section 16 – Archaeology (Subsection 16.3.3)
■ *Northern Territory Aboriginal Sacred Sites Act.*	Section 16 – Archaeology (Subsection 16.1)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
Baseline information should be provided regarding historic or cultural heritage in the region, including: ■ A description and location of Indigenous and non-Indigenous sites, places or objects of historic or cultural heritage significance (e.g. traditional land-use);	Section 16 – Archaeology (Subsection 16.4)
■ Survey(s) used to identify sites, places or objects of historic or cultural heritage significance (e.g. archaeology);	
■ Areas nominated for listing or listed on Commonwealth and Northern Territory registers of Indigenous cultural heritage; and	
■ Provision of evidence of an Aboriginal Areas Protection Authority (AAPA) Authority Certificate under the *Northern Territory Aboriginal Sacred Sites Act.*	Section 2 – Regulatory Framework (Subsection 2.5.4)
The EIS should provide a summary outlining the survey effort and level of confidence that all items of heritage or cultural significance at risk have been identified. The EIS should provide information on the current status of any approvals, permits or clearances in relation to the protection of heritage items or places.	Section 16 – Archaeology (Subsections 16.3 and 16.4.2)
The EIS must outline consultations with Indigenous stakeholders and Traditional Owners for all areas potentially affected by the Project. Determination and details should be provided of current Traditional Owner utilisation of Project areas, and spiritual/cultural significance of potentially affected areas.	Section 5 – Consultation Section 3 – Project Description (Subsection 3.3.5)
3.8.3 Assessment of Risks ■ An assessment of the Project's potential impacts on sacred sites, heritage places, cultural sites and any potential impacts on Indigenous culture more broadly;	Section 4 – Environmental Risk Assessment Section 16 – Archaeology (Subsection 16.5) Section 2 – Regulatory Framework (Subsection 2.5.4) discusses sacred sites
■ Details of the Project's requirements to apply to, or applications already made to, the NT Minister for Lands, Planning and the Environment to disturb or destroy a prescribed archaeological place and/or object under the *Heritage Act*; and	Section 16 – Archaeology (Subsection 16.3.3)
■ An assessment of risk to significant cultural sites from vibration and dust.	Section 16 – Archaeology (Subsection 16.5.2)
Advice and permits on the conduct of heritage surveys should be sought from the responsible authorities. Independent qualified professionals, in consultation with the Traditional Owners, or their representative bodies in the relevant area, must conduct surveys. Research and surveys are to be carried out using an appropriate methodology which provides for involvement of Indigenous people and which is acceptable to the Traditional Owners concerned with the relevant areas. Relevant Indigenous groups should be consulted in relation to the nature and scope of surveys and the appointment of the people to undertake them. Consultation with historical organisations should also be undertaken, where relevant.	Section 16 – Archaeology (Subsection 16.4). Traditional Owners participated in the archaeological field survey. There are no historical organisations on Groote Eylandt.
3.8.4 Mitigation The EIS should describe the prevention and mitigation of potential risks to existing sites or items of historic and cultural heritage. The EIS should include: ■ Procedures to avoid significant sites and areas;	Section 16 – Archaeology (Subsection 16.6)
■ Protection of key sites during construction, operation and decommissioning work;	Section 16 – Archaeology (Subsection 16.6.3)
■ Measures to enable the Proponent, or contractor to the Proponent, to meet its duty of care to protect the cultural and heritage values of any places or items of significance; and	
■ Procedures for the discovery of surface or sub-surface items during the course of the Project.	Section 16 – Archaeology (Subsection 16.6.4)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
3.8.5 Monitoring The EIS should describe any monitoring and reporting that is proposed to be undertaken, including any contingency measures. The aim of monitoring is to determine the effectiveness of mitigation measures and identify the need for remedial measures.	Section 16 – Archaeology (Subsections 16.5.2 and 16.6.3)
3.9 Rehabilitation, Decommissioning and Closure **3.9.1 Key Risks** The EIS should consider all potential environmental impacts associated with the rehabilitation, decommissioning and closure of the Project. The risk assessment should demonstrate that rehabilitation achieves a stable and functioning landform, which is consistent with the surrounding landscape and other environmental values. The prevention and mitigation of risks associated with closure and rehabilitation of the open pit and the potential impact on the environment and/or associated communities are required to be adequately addressed.	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3)
3.9.2 Information Requirements Discuss the various aspects of proposed progressive and final rehabilitation of disturbed areas and decommissioning and closure associated with the Project, including: ■ Proposed staging and timing;	Section 3 – Project Description (Figures 3-12 to 3-15) Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.4)
■ Removal of plant, equipment, structures, hardstand and concrete footings, buildings, water storages, and methods proposed for stabilisation of affected areas;	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.5)
■ Reinstatement of surface waterways, where diversion of waterways are proposed during operations;	Not applicable. No diversions are proposed as part of the project
■ Final landform design, including the design approach and methodology used, and any voids or landscape depressions to be left at cessation of mining;	Section 3 – Project Description (Figure 3-15) Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.5)
■ Closure criteria and future land tenure arrangements;	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.5)
■ Describe proposed post-mining land uses which have been identified and agreed upon through consultation with stakeholders;	Section 6 – Mine Rehabilitation and Closure
■ Availability, sources and volumes of materials required for rehabilitation, revegetation and mine closure (e.g. topsoil);	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.5)
■ Proposed revegetation program, with selection and collection of local native species e.g. native grasses and other vegetation;	Section 6 – Mine Rehabilitation and Closure (Subsections 6.2.3 and 6.3.4)
■ Methods to decommission and close water bores;	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.5) describes methods to decommission exploration drill holes. Groundwater bore holes will remain operational for long term monitoring.
■ Other preparations required for rehabilitation (e.g. seed harvesting, seedling generation);	Section 6 – Mine Rehabilitation and Closure (Subsections 6.2.3 and 6.3.4)

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
■ Provide the results of investigation into the physical, geo-technical and chemical properties of the ore body and overburden with respect to rehabilitation outcomes; and	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.3)
■ A discussion of appropriate remediation techniques to be used to achieve end land use objectives, materials required and confirmation of their availability must be included.	Section 6 – Mine Rehabilitation and Closure
3.9.3 Assessment of Risks ■ Closure planning should be risk-based taking into account results of materials characterisation, data on the local environmental and climatic conditions, and consideration of potential impacts through contaminant pathways and environmental receptors. Identify risks to the successful rehabilitation and closure of the Project, including risks to prescribed closure timeframes, including:	Section 19 – Environmental Management Plan (Subsection 19.4.3)
■ Closure timeframes and objectives and the Project not realising its projected outcomes (i.e. delays, unexpected or forced closure, etc.);	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.4)
■ Risk that the Project may create an ongoing environmental, social and/or economic legacy if operations are required to cease ahead of schedule due to unforeseen circumstances, prior to the planned closure and rehabilitation of the site; and	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.5)
■ The post-closure risk assessment should include a discussion of the effects of: – changes in the assumptions used as a basis for the assessment; and – natural events, including earthquakes, rain depressions, fire and flood.	Section 4 – Environmental Risk Assessment Section 6 – Mine Rehabilitation and Closure Section 19 – Environmental Management Plan
3.9.4 Mitigation A draft Mine Closure Plan (MCP), specific to the Project, should be prepared to address identified risks associated with rehabilitation, decommissioning and closure. The MCP must provide an outline of the issues that require management at closure and demonstrate that all relevant issues and appropriate management measures have been identified. The MCP should demonstrate that ecologically sustainable mine closure can be achieved consistent with agreed post-mining outcomes and land uses, and without unacceptable liability to the Northern Territory. The MCP should highlight any changes to the existing MCP for the GEMCO Mine, should it be updated to include the GEMCO Eastern Leases Project.	Section 6 – Mine Rehabilitation and Closure Section 19 – Environmental Management Plan (Subsection 19.4.3)
The MCP should include: ■ Mitigation measures to address risks identified in Section 3.9.3;	Section 19 – Environmental Management Plan (Subsection 19.4.3)
■ Measures required to prevent contamination of surface and groundwater resources, including cross contamination of aquifers, if required;	
■ Measures to ensure that placement of tailings and overburden will be physically isolated from the environment and that any contaminants arising from the tailings will not result in any short (whilst operational), medium (post closure and under institutional control) or long term (post-institutional control) detrimental environmental impacts;	
■ Contingencies to make landforms secure and non-polluting in the event of unexpected or temporary closure;	
■ Measures to minimise the long term introduction and control of weeds;	Section 19 – Environmental Management Plan (Subsections 19.4.3, 19.4.4)
■ Revegetation strategies for disturbed sites to utilise local native plant species similar in type, density and abundance to those existing in adjacent areas;	Section 19 – Environmental Management Plan (Subsection 19.4.3)
■ Measures to ensure that rehabilitation of habitat would be suitable for use by species identified Section 3.5.3; and	

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
■ Measures to ensure the stabilisation of erosion, to a level similar to comparable landforms in surrounding undisturbed areas.	Section 19 – Environmental Management Plan (Subsection 19.4.3)
The EIS should also include measures describing how the Proponent will maintain its environmental obligations should the Project be temporarily closed or suspended.	Section 6 – Mine Rehabilitation and Closure (Subsection 6.3.5)
3.9.5 Monitoring ■ Describe the post-mining monitoring and reporting to be used to evaluate and report on the effectiveness and performance of the mitigation measures (Section 3.9.4);	Section 19 – Environmental Management Plan (Subsection 19.4.3)
■ Describe the contingency measures to be implemented in the event that monitoring demonstrates that management measures have not been effective; and	
■ Provide outcome and assessment criteria that will give early warning that management and mitigation measures are not achieving the outcomes and benefits expected and identified by the Proponent.	
3.10 Other Risks Other environmental risks should be identified and management strategies proposed, including, but not limited to:	-
3.10.1 Air The potential nuisance and human health issues associated with air quality, including dust, and mitigation measures should be discussed in Sections 3.5 and 3.6. The potential sensitivity of receptors to air quality, including dust, and mitigation measures should be discussed in relevant sections of the EIS. The Proponent should also assess the impacts of the Project on air, more broadly, including:	Section 4 – Environmental Risk Assessment Section 12 – Air Quality (Subsections 12.8 and 12.9) Section 19 – Environmental Management Plan (Subsection 19.4.7)
■ Possible impacts of the following air quality issues resulting from the Project: – ambient air quality (in particular the PM_{10} fraction); – dust; and – odour/gases.	Section 12 – Air Quality (Subsections 12.8 and 12.9). There are no processes being undertaken as part of the project that could give rise to odour and gases.
■ Dust suppression strategies and monitoring of dust impacts; and	Section 12 – Air Quality (Subsection 12.9)
■ Meteorological information applicable to air quality in the project area.	Section 12 – Air Quality (Subsection 12.5)
Risks to air quality may arise from emissions of chemicals, particulates or biological materials from: ■ Drilling, blasting and materials handling;	Section 12 – Air Quality (Subsection 12.7.2)
■ Crushing and processing;	Section 12 – Air Quality (Subsection 12.7.2). No changes to the processing circuit are proposed as part of the project. Any air quality impacts as a result of the operation of the concentrator are already captured in the background air quality data presented in Section 12 – Air Quality.
■ General site movements over unsealed surfaces; and	Section 12 – Air Quality (Subsection 12.7.2)
■ Wind erosion mobilising dust from exposed surfaces, such as from waste dumps, laydown areas, stockpiles, and sites of vegetation clearing.	

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
A discussion of existing variability in air quality target parameters, such as the impact of seasonal smoke haze, should be included in a relevant section of the EIS. Details of the proposed air monitoring, including technique, location, frequency and details of laboratory undertaking analysis, and target parameters, and proposed reactive management that are tied to monitoring thresholds, should be provided.	Section 12 – Air Quality (Subsection 12.9). This section presents background air quality monitoring data. As noted in Section 12.6, smoke from fires, including bushfires, cultural burning practices, and domestic burning of rubbish and leaf litter, is a component of existing background air quality.
3.10.2 Bushfires The Proponent should be aware of sections of the *Bushfires Act* and Regulations that apply to the Project and address risk and management of bushfires in relation to Sections 3.5 and 3.6. The EIS should assess the risk of bushfires and propose appropriate fire management measures.	Section 18 – Health and Safety (Subsection 18.3.4)
3.10.3 Noise and Vibration The potential sensitivity of receptors to noise and vibration and mitigation measures should be discussed in a relevant section of the EIS. The Proponent should address the impact of noise and vibration resulting from the project on residents and the community in a relevant section of the EIS. The EIS should outline methods for communicating with, and reducing the impact on, residents within the vicinity of the Project who may be affected by the project.	Section 13 – Noise and Vibration (Subsections 13.6 and 13.7)
Risk assessment for the Project should occur with respect to noise and vibrations from Project components. Potential sensitive receptors, expected impacts and proposed management should be identified with regard to Project-generated noise and vibrations.	Section 4 – Environmental Risk Assessment Section 13 – Noise and Vibration (Subsections 13.6 and 13.7)
The EIS should outline proposed management to mitigate any identified risks from the Project with regard to noise and vibration emissions. If relevant, the EIS should describe proposed communication with any residents and communities predicted to be impacted by noise and vibration from the project.	Section 13 – Noise and Vibration (Subsection 13.7)
3.10.4 Visual Amenity The extent and significance of the changed landscape on visual amenity during all stages of the Project should be discussed in a relevant section of the EIS. Aspects of the project that would be visible from key vantage points, publicly accessible areas and areas of significance, should be discussed.	Section 14 – Visual Amenity
3.10.5 Mosquito Breeding There is potential for mine sites to create mosquito breeding sites. The Proponent should be aware of sections of the *Public and Environmental Health Act* that apply to the Project and address risk and management of biting insects in a relevant section of the EIS. In particular, the EIS should identify:	Section 18 –Health and Safety (Subsection 18.3.4)
■ Measures to ensure water pond (i.e. sediment pond) is designed with minimal mosquito breeding potential (i.e. steep sides, deep open water); and	
■ Information on appropriate personal protection measures that could be utilised by workers during periods of elevated mosquito abundance.	
Information on mosquito breeding should be consistent with and make appropriate reference to the *Guidelines for preventing mosquito breeding sites associated with mining sites*.	

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
4 Environmental Management The specific safeguards and controls proposed to be employed to minimise or remedy environmental impacts identified in the risk assessment process are to be included in an EMP. The EMP should be strategic, describing a framework for continuing management, mitigation and monitoring programs for the significant environmental impacts of the Project.	Section 19 – Environmental Management Plan
The scope, content and structure of the EMP will be a function of the outcomes of the environmental risk assessment and determined by the significance of the environmental impacts. The EMP should not be prepared in isolation but should be consistent and integrated with the principles of an environmental management system. The EMP should include specialised management plans where it is necessary to provide a high level of operational detail (e.g. Water Management Plan, Erosion and Sediment Control Plan, etc.). As much detail as is practicable should be provided to enable adequate assessment of the proposed environmental management practices and procedures	
The EMP needs to address the Project phases (development, operation, decommissioning, closure and post-closure) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, necessary resourcing, responsibility and timing for each environmental issue.	
The EMP should include: ■ The proposed management structure of the Project and its relationship to the environmental management of the site, including personnel responsible for maintaining and approving the EMP;	Section 19 – Environmental Management Plan (Subsection 19.3)
■ A description of the main elements of the environmental management system and reference to related documents determined by the Proponent to be necessary to ensure the effective planning, operation and control processes that relate to the environmental management system;	
■ A register of ownership for the mining interests associated with the Project, including the title numbers, title holders and status;	
■ The name of the agency responsible for endorsing, approving and/or overseeing each mitigation measure or monitoring program;	Section 19 – Environmental Management Plan (Subsection 19.4.2)
■ Proposed reporting procedures consistent with Territory and Australian Government legislative requirements;	Section 2 – Regulatory Framework Section 19 – Environmental Management Plan
■ A summary table listing the commitments made in the EIS, including clear timelines for key commitments and performance indicators, with cross-references to the text of the EIS;	Section 19 – Environmental Management Plan (Subsection 19.5)
■ Management targets and objectives for relevant environmental impacts and/or factors;	Section 19 – Environmental Management Plan (Subsection 19.4)
■ Performance indicators by which all anticipated and potential impacts can be measured;	
■ Proposed monitoring programs to allow early detection of adverse impacts. Monitoring programs should include: – sampling pattern and density; – parameters to be monitored; – monitoring locations; – frequency of monitoring; and – reporting requirements.	

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
■ Sampling procedures and frequency, where relevant: – sample containers, handling and preservation techniques; – sampling devices and equipment; – equipment decontamination procedures; – how results will be recorded; – laboratory techniques and methods of data analysis; – equipment and instruments calibrated or verified at specified intervals; – validation reporting; and – quality assurance and quality control.	Section 19 – Environmental Management Plan (Subsection 19.4)
■ Contingencies for emergency events, such as hydrocarbon and other hazardous chemical spills or natural disasters;	
■ Procedures for dealing with failure to meet performance criteria and targets, non-compliance with environmental management controls, environmental incidents and emergencies;	Section 19 – Environmental Management Plan (Subsections 19.3, 19.4)
■ Where interpretation of the monitoring data or other observations have detected the potential for or actual adverse trends in performance or impacts, detail what remedial/corrective strategies and actions will be implemented. Include scopes of work where appropriate together with a commitment to an implementation timetable and any modifications to the monitoring program required in order to assess the performance of the actions;	Section 19 – Environmental Management Plan (Subsection 19.4)
■ An overview of the environmental awareness training and education process regarding responsibilities, including: – the induction program (e.g. general, site, department); – communication of the requirements of the EMP to all employees and contractors; – environmental emergency response training; – particular training requirements for targeted personnel; and – any other environmental training or education requirements.	Section 19 – Environmental Management Plan (Subsections 19.3, 19.4)
■ Provision for the periodic review of the EMP; and	Section 19 – Environmental Management Plan (Subsection 19.3)
■ Provision for independent environmental auditing of the Project.	
The EMP would continue to be developed and refined following the conclusion of the assessment process and would form part of the Mining Management Plan, taking into consideration the proposed timing of development activities, comments on the EIS and incorporating the Assessment Report recommendations (if any) and conclusions.	
5 General Advice on the Environmental Impact Statement **5.1 General Content** The EIS should be a stand-alone document. It should contain sufficient information to avoid the need to search out previous or additional, unattached reports.	Noted
The EIS should enable interested stakeholders and the NT EPA to understand the environmental consequences of the Project. Information provided in the EIS should be objective, clear, succinct and easily understood by the general reader. Maps (using an appropriate scale, resolution and clarity), plans, diagrams and other descriptive detail should be included. Technical jargon should be avoided or accompanied by a clear explanation so that it is readily understandable. Cross-referencing should be used to avoid unnecessary duplication of text.	Noted
The level of analysis and detail in the EIS should reflect the level of significance of the potential impacts on the environment, as determined through adequate technical studies. Consideration of appropriate spatial, temporal and analytical scales should be used to clearly communicate the potential impacts to the environment.	Noted

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
Information materials summarising and highlighting risks of the Project should be provided in a culturally appropriate format and language, accompanied by graphics and illustrations that assist with interpretation, where relevant.	Noted
5.2 Structure, Format and Style The EIS should comprise of three elements: 1. Executive summary The executive summary must include a brief outline of the Project and each chapter of the EIS, allowing the reader to obtain a clear understanding of the proposed action, its environmental implications and management objectives. It must be written as a stand-alone document able to be reproduced on request by interested parties who may not wish to read the EIS as a whole.	Noted
2. Main text of the document The main text of the EIS should include a list of abbreviations, a glossary to define technical terms, acronyms, abbreviations, and colloquialisms. The document should consist of a series of chapters detailing the level of significance and management of the expected and potential impacts on the environment from the proposed action.	Section 21 – Glossary Section 22 – Abbreviations
3. Appendices The appendices must include detailed technical information, studies or investigations necessary to support the main text. These will be made publicly available and should include: ■ A table listing how these Terms of Reference have been addressed in the EIS, cross-referenced to chapters, page numbers and/or appendices;	Section 24 – Guide to the Terms of Reference
■ The name of, work done by and the qualifications and experience of the persons involved in preparing the EIS;	Section 23 – EIS Study Team
■ A table listing commitments made by the Proponent; and	Section 19 – Environmental Management Plan (Subsection 19.5)
■ Detailed technical information, studies or investigations necessary to support the main text.	Detailed technical studies are provided in Appendices A to L of the EIS
The EIS should be produced on A4 size paper capable of being photocopied, with any maps, diagrams or plans on A4 or A3 size paper, and in colour, if possible.	Noted
5.3 Referencing and Information Sources All sources must be appropriately referenced using the Harvard Standard. The reference list should include the address of any internet pages used as data sources. All referenced supporting documentation and data, or documents cited in the EIS must be available upon request. For information given in the EIS, the EIS must state: ■ The source of the information; ■ How recent the information is; ■ How the reliability of the information was tested; and ■ What uncertainties (if any) are in the information.	Section 20 – References. Each section of the EIS describes the information used as the basis of the various specialist studies, including the source of the information, and where relevant its reliability and any uncertainties associated with the information. The data collection and data analysis methodologies used to support each technical study are detailed in the respective technical reports presented as appendices to the EIS. Refer to Section 23 – Study Team, which also includes a list of contributors to the EIS, and their qualifications.

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
All known and unknown variables or assumptions made in the EIS must be clearly stated and discussed. Confidence levels must be specific, as well as the sources from which they were obtained. The extent to which a limitation, if any, of available information may influence the conclusions of the environmental assessment should be discussed.	Limitations to studies are discussed, where relevant, in the individual sections of the EIS.
■ Reliability of the data and an explanation of the sampling criteria and approach should be provided where data are used to support statements, studies and claims in the EIS. Sufficient discussion should accompany the data to demonstrate that the data and results of quality control and quality assurance testing are suitable and fit for purpose. The NT EPA's *Guideline for Consultants Reporting on Environmental Issues* outlines the minimum information required for the presentation of data from studies, investigation, monitoring and remediation of land and water contain to enable efficient review.	The reliability of data and detailed explanations on data collection and use of the data in specialist studies is provided, where relevant, in the individual sections of the EIS.
The EIS must include information on any consultation about the Project, including: ■ Any consultation that has already taken place;	Section 5 – Consultation (Subsection 5.4)
■ A list of persons and agencies consulted during the EIS;	Section 5 – Consultation (Attachment 5-1)
■ If there has been consultation about the Project, any documented response to, or result of, the consultation;	Section 5 – Consultation (Subsection 5.8)
■ Proposed consultation about relevant impacts of the Project; and	Section 5 – Consultation (Subsection 5.10.1)
■ Identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.	Section 5 – Consultation (Subsection 5.5.1 and Attachment 5-1)
The EIS has an important role in informing the public about this Project. It is essential that the Proponent demonstrates how any public concerns were identified and will influence the design and delivery of the Project. Public involvement and the role of government organisations should be clearly identified. The outcomes of any surveys, public meetings and liaison with interested groups should be discussed including any changes made to the Project as a result of consultation. Details of any ongoing liaison should also be discussed.	Section 5 – Consultation (Subsections 5.8 and 5.10)
If it is necessary to make use of material that is considered to be of a confidential nature, the Proponent should consult with the NT EPA on the preferred presentation of that material, before submitting it to the NT EPA for consideration. Information of a confidential nature should not be disclosed in the draft EIS if disclosure of the information might:	Noted
■ Prejudice inter-governmental relations between an Australian body politic and a body politic overseas or between two (2) or more bodies politic in Australia or in the Territory;	Noted
■ Be an interference with a person's privacy;	Noted
■ Disclose information about an Aboriginal sacred site or Aboriginal tradition; or	Noted
■ Disclose information obtained by a public sector organisation from a business, commercial or financial undertaking that is: – a trade secret; or – other information of a business, commercial or financial nature and the disclosure is likely to expose the undertaking unreasonably to disadvantage.	Noted
It is an offence under the N*orthern Territory Environment Protection Authority Act* (NT EPA Act) to give information to the NT EPA that the person knows is misleading or contains misleading information.	Noted

TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
5.4 Administration The Proponent should lodge ten bound hard copies and an electronic copy (Adobe PDF format) of the draft EIS with the NT EPA. The electronic copies should be provided both as a single file of the entire document and separate files of the document components.	Noted
The Proponent should consider the file size, the number of files, format and style of the document appropriate for publication on the NT EPA website. The capacity of the website to store data and display the material may have some bearing on how the documents are constructed.	Noted
The Proponent is to advertise that the draft EIS is available for review and comment, in the: ■ NT News; and ■ Arafura Times.	Noted
The NT EPA requires the complete draft EIS document and a draft of the advertisement at least one week prior to advertising the draft EIS, to arrange web upload of the document and review and comment on advertising text.	Noted
5.5 Public Exhibition Sufficient copies of the draft EIS should be provided to and be made available for public exhibition at: ■ NT EPA, 2nd Floor, Darwin Plaza, 41 Smith Street Mall, Darwin; ■ Mines and Energy Information Centre, Department of Mines and Energy, 3rd Floor, Paspalis Centrepoint, 48 Smith Street Mall, Darwin; ■ Northern Territory Library, Parliament House, Darwin; ■ East Arnhem Regional Council, Angurugu; ■ Anindilyakwa Land Council, 30 Bougainvillea Drive, Alyangula; and ■ Environment Centre Northern Territory, Unit 3, 98 Woods St, Darwin.	Noted
The public exhibition period for the draft EIS will be six (6) weeks. The EIS exhibition period should not occur in late December or January in any year to ensure optimal opportunity for public and Government viewing of the EIS document. The NT EPA will direct the Proponent to extend the EIS exhibition period if the EIS exhibition overlaps any Christmas and January periods.	Noted

Table 24-2 Anindilyakwa Land Council – Comments on the Draft Terms of Reference

ANINDILYAKWA LAND COUNCIL COMMENTS ON THE DRAFT TERMS OF REFERENCE	EIS SECTION REFERENCE/ COMMENTS
1. A key requirement of the Traditional Owners of this area is that the environmental integrity of the Emerald and Amagula Rivers is not impacted by this mining project. Key requirements would be the maintenance of current flows at all times and the protection of water quality both chemically and through the retention of current turbidity regimes.	The project has been designed to ensure that mining will not encroach on any of the watercourses traversing the project site. In particular, buffers have been defined around the main channels of the Emerald River, Amagula River and their tributaries. The mine plan and quarry extents were then designed to ensure no encroachment on the buffers, and to restrict mining to areas beyond the defined drainage channels and associated buffers. Further detail is provided in Section 10 – Surface Water, and in the *Surface Water Drainage Report* (Appendix G). Section 9 – Groundwater assesses the potential for groundwater drawdown due to the project to reduce flows on watercourses. It concludes that groundwater drawdown due to the project will not significantly impact flows in watercourses. Section 9 – Groundwater and Section 10– Surface Water describe the management measures that will be implemented to avoid any impacts on water quality.
2. As the area most threatened by this project, the spring fed headwaters of the Emerald River lies outside of the GEMCO lease we believe it is crucial that this EIS is extended in its coverage to include the upper reaches of the Emerald River (above the Emerald River Road Bridge) to the boundary of the southern lease. This study would provide crucial baseline data for the flora and fauna of the unique area as well as additional knowledge on the water quality and hydrology of the area. This data could provide an early warning of any issues occurring during the mining process and a baseline for any remedial works that may be required.	The ecology and geomorphology field surveys undertaken for the EIS cover the full extent of the Eastern Leases, and extend well beyond the disturbance footprint of the project. The *Baseline Surface Water Monitoring Report* (Appendix H) describes the existing water quality monitoring program, which includes sites within and downstream of the project site. The proponent also has additional water quality monitoring sites for the existing mine that are located both upstream and downstream of the Emerald River Bridge. It is considered that the water quality monitoring program that is in place is sufficient to assess the baseline water quality above the Emerald River Bridge. Additional information is provided in the *Terrestrial Ecology Report* (Appendix C), the *Aquatic Ecology Report* (Appendix D) and the *Baseline Surface Water Monitoring Report* (Appendix H).
3. The Emerald River is perennially fed by springs and groundwater flows so it is crucial that the hydrological model produced for this project is of the highest standard and able to accurately predict any adverse impacts from GEMCO's activities particularly in relation to dewatering activities and any changes to flow levels or water quality in either river system.	A 3D numerical groundwater flow model was developed to predict the extents of depressurisation and the associated impacts on groundwater users and the surrounding environment. The groundwater model for the project was developed using MODFLOW-SURFACT. MODFLOW-SURFACT is the most widely used groundwater model in Australia, and it is considered to be industry standard. Further detail is provided in Section 9 – Groundwater (Subsection 9.4.3), and in the *Groundwater Report* (Appendix F).

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4. Much of the assessment area for this proposal consists of one large catchment so it is essential that surface flows are modelled particularly in respect of a 1 in 100 year rainfall event. Such an event during the mining phase could have major long lasting environmental impacts on both rivers and to those seeking to use this water for domestic purposes downstream at Emerald River Outstation and as such a contingency plan should be prepared.	Flood modelling was undertaken including modelling of the 1% Annual Exceedance Probability (AEP) (1 in 100 year) flood extents. The results of this modelling were used to define suitable buffers around watercourses, and the project has been designed to ensure mining will not encroach on the watercourses traversing the project site. The *Surface Water Drainage Report* (Appendix G) provides detail on the flood modelling that was undertaken to delineate the buffers. Section 10 – Surface Water also discusses potential impacts on surface water and surface water users as a result of the project.
5. GEMCO need to provide a detailed plan for the management for pit water and the disposal method to be utilised without impact to off lease areas.	A detailed discussion of the management of quarry / pit water is provided in Section 10 – Surface Water (Subsection 10.5.5).
6. As Smectite clays play a very important part in water quality on the current mining leases we believe it is crucial for GEMCO to map the occurrences of this material across the site and the methodology to be used to avoid contamination of pit waters and the treatment of those waters that are affected prior to disposal.	Section 6 – Mine Rehabilitation and Closure discusses the geochemical testing that has been undertaken for the project, including for smectite clays. The smectite clays that were tested as a part of the project's geochemistry study were found to be non-dispersive. Additional technical detail is provided in the *Geochemistry Report* (Appendix A). Section 10 – Surface Water discusses water quality issues for the project including any potential issues related to smectite clays.
7. Groote Eylandt is recognised as a very important location for the future protection of threatened species including the Northern Hopping Mouse and Masked Owl. Both these species have been recorded in these leases and it crucial that all efforts are employed to ensure that protection is provided to key habitat areas. To this end we believe that the methods used during this assessment for the location of these species must be appropriate and the most effective for modern science. It is well recognised that standard methods of mammal trapping are ineffective for Northern Hopping Mouse and need to be modified to the methods already known to GEMCO through their PhD project work. It will be unsuitable to the Land Council if standard mammal trapping methods are utilised for this species.	The *Terrestrial Ecology Report* (Appendix C) details the trapping methods utilised during the field surveys. The results of the PhD study into the Hopping-mouse were considered in designing the field survey program for the project. Based on advice from the PhD candidate, techniques such as the use of Infrared cameras and spotlighting were used in addition to standard methods required by the NT Fauna Survey Guidelines and the Federal Department of the Environment. It should be noted that the Brush-tailed Rabbit-rat, Northern-hopping mouse and Northern Quoll were observed utilising these survey methods.
The Masked Owl which has only been detected on Groote in recent years and little is known of its distribution or population, as such it is important that the assessment method identifies key roosting locations and potential nesting sites. This is a difficult task and may require the use of tracking devices so we are better informed of the impacts this proposed activity will have on this species.	As discussed in the *Terrestrial Ecology Report* (Appendix C), the Masked Owl was recorded from a total of four locations within the project site during the field survey, using call playback and spotlighting. The suggested detailed investigation of the roosting and nesting locations of this particular species using tracking devices, although worthwhile, is beyond the scope of the EIS. The work proposed would need to be undertaken over several years at least, in order to obtain appropriate data. The field survey undertaken for the EIS was in accordance with appropriate regulatory guidelines. The proponent intends on having separate discussions with the ALC regarding this issue.